TRIPLE DIODE-TRIODE

Triple diode-triode intended for F.M. and A.M. signal detection and A.F. signal amplification.

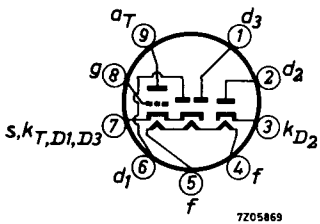
QUICK REFERENCE DATA			
Triode section			
Anode current	I_a	1.0	mA
Transconductance	S	1.45	mA/V
Amplification factor	μ	70	-

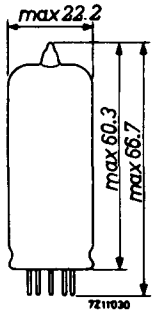
HEATING: Indirect by A.C. or D.C.; series supply

Heater current	I_f	100	mA
Heater voltage	V_f	28	V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





It is recommended to connect pin 5 to earth.

CAPACITANCES

Triode section

Grid to all except anode	$C_{g(a)}$		1.9	pF
Anode to all except grid	$C_{a(g)}$		1.4	pF
Anode to grid	C_{ag}		2.0	pF
Grid to heater	C_{gf}	max.	0.04	pF

Diode sections

Diode No. 1 to all	C_{d_1}		0.8	pF
Diode No. 2 to all	C_{d_2}		4.8	pF
Diode No. 3 to all	C_{d_3}		4.8	pF
Cathode (D_2) to all	C_{kD_2}		5.0	pF
Diode No. 1 to heater	C_{d_1f}	max.	0.25	pF
Diode No. 3 to heater	C_{d_3f}	max.	0.2	pF
Cathode (D_2) to heater	C_{kD_2f}		2.5	pF

Between triode and diode sections

Anode to diode No. 1	C_{ad_1}	max.	0.12	pF
Anode to diode No. 3	C_{ad_3}	max.	0.1	pF
Anode to cathode (D_2)	C_{akD_2}	max.	0.01	pF
Grid to diode No. 1	C_{gd_1}	max.	0.07	pF
Grid to diode No. 3	C_{gd_3}	max.	0.02	pF
Grid to cathode (D_2)	C_{gkD_2}	max.	0.005	pF

TYPICAL CHARACTERISTICS

Triode section

Anode voltage	V_a	100	170	200	V
Grid voltage	V_g	-1	-1.85	-2.3	V
Anode current	I_a	0.8	1.0	1.0	mA
Transconductance	S	1.45	1.45	1.40	mA/V
Amplification factor	μ	70	70	70	-
Internal resistance	R_i	48	48	50	kΩ

OPERATING CHARACTERISTICS

Triode section as R.C. coupled A.F. amplifier

Grid resistor R_g = 10 MΩ

Supply voltage	V_b	200	200	200	170	170	170	V
Anode resistor	R_a	220	100	47	220	100	47	kΩ
Grid resistor next stage	R_g'	0.68	0.33	0.15	0.68	0.33	0.15	MΩ
Anode current	I_a	0.56	1.00	1.60	0.46	0.82	1.25	mA
Voltage gain	V_o/V_i	53	44	34	51	42	32	-
Distortion:								
at output voltage V_o = 3 V_{RMS}	d_{tot}	0.3	0.4	0.5	0.4	0.5	0.6	%
at output voltage V_o = 5 V_{RMS}	d_{tot}	0.4	0.6	0.9	0.5	0.8	1.1	%
at output voltage V_o = 8 V_{RMS}	d_{tot}	0.9	1.0	1.5	1.1	1.3	2.0	%

Supply voltage	V_b	100	100	100	V
Anode resistor	R_a	220	100	47	kΩ
Grid resistor next stage	R_g'	0.68	0.33	0.15	MΩ
Anode current	I_a	0.21	0.35	0.52	mA
Voltage gain	V_o/V_i	44	35	26	-
Distortion:					
at output voltage V_o = 3 V_{RMS}	d_{tot}	1.0	1.3	2.0	%
at output voltage V_o = 5 V_{RMS}	d_{tot}	1.7	2.3	4.3	%

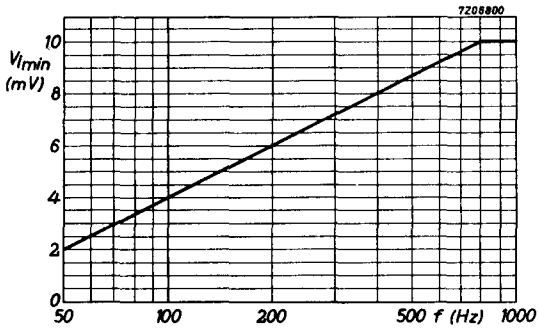
TYPICAL CHARACTERISTICS

Diode section

Internal resistance diode No.1 at diode voltage V_{d_1} = +10 V	R_i D_1	5	kΩ
Internal resistance diode No.2 at diode voltage V_{d_2} = +5 V	R_i D_2	200	Ω
Internal resistance diode No.3 at diode voltage V_{d_3} = +5 V	R_i D_3	200	Ω
Ratio between R_i (D_2) and R_i (D_3)		min. 0.67 max. 1.5	

Microphony Triode section

No special precautions against microphony are required in circuits where the input voltage is min. 10 mV for 50 mW output of the output tube at frequencies higher than 800 Hz.
At lower frequencies the sensitivity may be increased according to the figure below.



LIMITING VALUES (Design centre rating system)

Triode section

Anode voltage	V_{a_o}	max.	550	V
	V_a	max.	250	V
Anode dissipation	W_a	max.	1	W
Cathode current	I_k	max.	5	mA
Grid resistor	R_g	max.	3	MΩ
Grid resistor at grid current bias	R_g	max.	22	MΩ
Cathode to heater voltage	V_{kf}	max.	150	V [1]

Diode sections

Diode No.1 voltage, negative peak	$-V_{d_{1p}}$	max.	350	V
Diode No.2 voltage, negative peak	$-V_{d_{2p}}$	max.	350	V
Diode No.3 voltage, negative peak	$-V_{d_{3p}}$	max.	350	V
Diode No.1 current:				
D.C. component	I_{d_1}	max.	1	mA
peak	$I_{d_{1p}}$	max.	6	mA
Diode No.2 current:				
D.C. component	I_{d_2}	max.	10	mA
peak	$I_{d_{2p}}$	max.	75	mA
Diode No.3 current:				
D.C. component	I_{d_3}	max.	10	mA
peak	$I_{d_{3p}}$	max.	75	mA

[1]) With regard to hum a max. AC heater to cathode voltage of 30 V_{RMS} is recommended.